

CHAPTER 7: AVIATION WEATHER SERVICES

The Federal Aviation Administration coordinates the delivery of aviation weather services to pilots to assist them in making flight related decisions. In this chapter, you will learn about these services, the various reports that they provide, and how to obtain them.

7.1 Sources of Weather Services

Several different government agencies, including the Federal Aviation Administration (FAA), National Oceanic and Atmospheric Administration (NOAA), and National Weather Service (NWS) work in conjunction with private companies to provide different means of accessing weather information.

Flight Service Station (FSS) and Automated Flight Service Station (AFSS)

The FAA Flight Service Station (FSS) is the primary source of preflight weather information. A preflight weather briefing from an automated FSS (AFSS) can be obtained 24 hours a day by calling 1-800-WX BRIEF from almost anywhere in the U.S. In areas not served by an AFSS, National Weather Service facilities may provide pilot weather briefings. Telephone numbers for NWS facilities and additional numbers for FSSs/AFSSs can be found in the *Airport/Facility Directory* (A/FD) or in the U.S. government section of the telephone book.

Flight Service Stations also provide in-flight weather briefing services, as well as scheduled and unscheduled weather broadcasts. An FSS may provide weather advisories to flights within its region of authority.

Direct User Access Terminal Service (DUATS)

The Direct User Access Terminal Service, which is funded by the FAA and operated by private contractors, allows any pilot with a valid pilot certificate to access weather information. There are two ways to access the DUATS. One is to go to one of the private contractor web pages. The other way requires a modem and a communications program supplied by a DUATS provider. To access weather information by this method, you use a toll-free telephone number to connect your computer directly to the DUATS computer. Current vendors of DUATS service and their telephone numbers are listed in the *Aeronautical Information Manual* (AIM).

En route Flight Advisory Service (EFAS)

The En route Flight Advisory Service, or Flight Watch, provides timely en route weather information. EFAS gives weather advisories that cover actual weather conditions and thunderstorm activity tailored to the type of flight, route, and cruising altitude. A pilot can usually contact an EFAS specialist from 6 a.m. to 10

p.m. anywhere in the conterminous U.S. and Puerto Rico. The standard EFAS frequency is 122.0 MHz for pilots flying between 5,000 feet AGL and 18,000 feet MSL. (See Chapter 13: Radio Communications, for details on contacting Flight Watch.)

Transcribed Weather Broadcast (TWEB)

A TWEB is a broadcast of recorded weather information on certain VOR and NAVAID frequencies. The broadcast includes information on expected sky coverage and cloud top conditions, visibility, weather, AIRMETs, SIGMETs, and NOTAMs (see Sections 7.2 and 7.5), as well as special notices.

TWEB reports provide individual forecasts for specific routes. TWEBs can be monitored by tuning your radio to the appropriate VOR or NDB frequency. A circled "T" inside the communication boxes of a VOR or NDB on a sectional indicates TWEB availability.

Automated Weather Observing System (AWOS) and Automated Surface Observation System (ASOS)

These systems consist of various sensors, a processor, a computer-generated voice subsystem, and a transmitter that broadcast local, minute-by-minute weather data directly to the pilot. AWOSs and ASOSs transmit a computer-generated voice over discrete VHF radio frequencies or the voice portion of a local NAVAID.

AWOS and ASOS reports typically include the location and time of the observation, the altimeter setting, the wind speed and direction, the density altitude, the visibility, the ceiling and sky cover, and information on current precipitation. The ASOS is an improved version of the AWOS and provides slightly more information.

AWOS and ASOS frequencies are printed on sectionals (see Chapter 12: Aeronautical Charts and Navigation) below the respective airport's data. Most AWOS sites also have a dial-up capability so that current weather information can be accessed via telephone. Their numbers can be found in the *Airport/Facilities Directory* (see Chapter 10: Flight Publications).

7.2 Weather Briefings

A weather briefing is an individual report tailored to your specific flight. It is given by a specialist at an FSS, AFSS, or the NWS.

Briefing Types

Standard Briefing

The standard briefing is the most comprehensive briefing. It provides an overall picture of the weather and covers the following information, in this order, where applicable to the route of flight:

Adverse Conditions: This section of the briefing includes information on adverse conditions that may influence a decision to cancel or alter the route of flight. Adverse conditions include significant weather, such as thunderstorms or aircraft icing, and other important items such as airport closures.

VFR Flight NOT RECOMMENDED: If the weather for the route of flight is below VFR (Visual Flight Rules) minimums, or if it is doubtful that the flight could be completed under VFR conditions, the briefer may state that VFR flight is not recommended. It is the pilot's decision whether or not to conduct the flight under VFR, but the advisory should be weighed carefully.

Synopsis: The synopsis is an overview of the weather. Fronts and major weather systems that affect the general area are reported.

Current Conditions: This portion of the briefing covers the current ceilings, visibility (statute miles), winds (knots, magnetic direction), temperature (°C), and dew point (°C). If it is more than 2 hours until the departure time, the current conditions will not be included in the briefing.

En Route Forecast: The en route forecast is a summary of the weather forecast for the proposed route of flight.

Destination Forecast: The destination forecast is a summary of the expected weather at the destination airport at the estimated time of arrival.

Winds and Temperatures Aloft: Forecast winds (knots, magnetic direction) and temperatures aloft (°C) are reported for specific altitudes for the route of flight. Temperatures are provided only on request.

Notices to Airmen: This portion of the briefing supplies NOTAM information pertinent to the route of flight that has not been published in the Notice to Airmen publication (see Chapter 10: Flight Publications). Published NOTAM information is provided only when requested.

Abbreviated Briefing

An abbreviated briefing is a shortened version of the standard briefing. You should request an abbreviated briefing when you need an update of specific weather information given in a previous briefing. In this case, the weather specialist needs to know the time and source of the previous briefing so pertinent information will not be omitted inadvertently.

Outlook Briefing

An outlook briefing should be requested when departure is expected in six or more hours. It provides only limited forecast information.

Obtaining a Briefing

To obtain a weather briefing, call 1-800-WX BRIEF from anywhere in the United States. When you talk to the briefer, you should give the following information:

type of flight (VFR), your name or glider number, aircraft type (glider), departure point, route of flight, destination, altitudes, estimated time of departure, estimated time en route. You will then need to specify the type of briefing you want: a standard briefing, an abbreviated briefing, or an outlook briefing. No matter which type of briefing you want, you may also want to request upper air sounding data to determine soaring conditions.

This is a telephone weather briefing from the Dallas FSS for a local operation of gliders and lighter-than-air at Caddo Mills, Texas (about 30 miles east of Dallas). The briefing is at 13Z.

"There are no adverse conditions reported or forecast for today."

"A weak low pressure over the Texas Panhandle and eastern New Mexico is causing a weak southerly flow over the area."

"Current weather here at Dallas is wind south 5 knots, visibility 12 miles, clear, temperature 21, dewpoint 9, altimeter 29 point 78."

"By 15Z we should have a few scattered cumuliform clouds at 5 thousand AGL, with higher scattered cirrus at 25 thousand MSL. After 20Z the wind should pick up to about 15 knots from the south."

"The winds aloft are: 3 thousand 170 at 7, temperature 20; 6 thousand 200 at 18, temperature 14; 9 thousand 210 at 22, temperature 8; 12 thousand 225 at 27, temperature 0; 18 thousand 240 at 30, temperature -7."

Figure 7.1 – Weather briefing example

Weather Briefing Example

Figure 7.1 gives the text of a typical telephone briefing. Since cumuliform clouds are predicted to develop at 1500Z, thermals will begin to form between 1300Z and 1500Z, when the sky is still clear. The cumuliform clouds mentioned at 5,000 feet indicate thermals extending to the tops of the clouds. (Of course, legally you can only climb to within 500 feet of cloud base.)

7.3 Observations

Aviation weather reports are designed to relay accurate information on current weather conditions. The information used in these reports is updated regularly. These reports are the aviation routine weather reports (METAR), weather depiction charts, pilot weather reports (PIREPs), and radar weather report (SD). The reports are the basis of the weather briefings obtained from FSS.

Aviation Routine Weather Reports (METAR)

The METAR is a coded report of current weather conditions. As the METAR in Figure 7.2 shows, the report consists of the report type, the station indicator, the issuance time, a report modifier, the wind speed and direction, the visibility, the runway visual range, the current weather conditions, the cloud cover, the temperature, the altimeter setting, and any remarks.

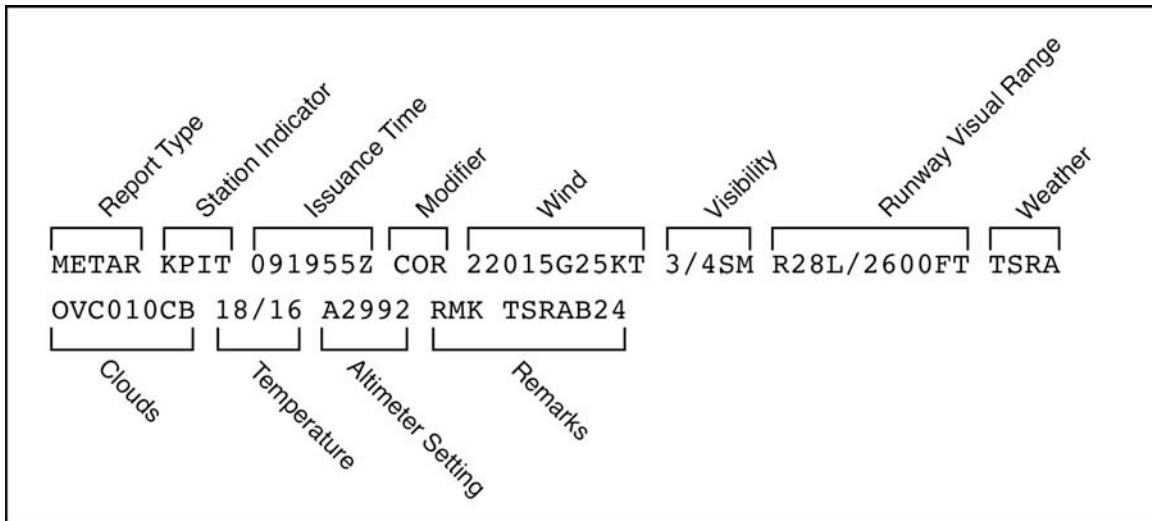


Figure 7.2 – METAR format

Report Type

METAR in this field indicates a normal, hourly report. SPECI indicates a special report.

Station Indicator

Every station is identified by a four-letter code established by the International Civil Aviation Organization (ICAO). U.S. station codes always begin with the letter “K”.

Issuance Time

The first two digits of this field are the day of the month. The last four are the time the report was issued, which is always given in Coordinated Universal Time (UTC, or Zulu time), as indicated by the “Z” at the end of the field.

Modifier

This field denotes whether the report was an automated (AUTO, AO1, or AO2) or a corrected (COR) report.

Wind

The wind is reported as a five-digit code (unless the wind exceeds 99 knots, in which case the code is six-digit). The first three digits indicate the wind direction from true north. If the wind direction is variable, this field reads “VRB.”

The last two (or three) digits indicate the wind speed in knots. If the wind is gusting, the letter “G” is followed by the peak gust.

Visibility

The visibility is reported in statute miles, as denoted by the letters “SM”.